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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/436,060	11/08/1999	James T Kealey	014/002C	6093

22869 7590 12/22/2004

GERON CORPORATION
230 CONSTITUTION DRIVE
MENLO PARK, CA 94025

EXAMINER	
GIBBS, TERRA C	

ART UNIT	PAPER NUMBER
1635	

DATE MAILED: 12/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/436,060	KEALEY ET AL.	
	Examiner	Art Unit	
	Terra C. Gibbs	1635	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 September 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *23 and 25-29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *23,25,27 and 29* is/are rejected.

7)☒ Claim(s) *28* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☒ Other: *Sequence search alignment*.

Given the high degree of similarity between the PCR primer taught by Villeponteau et al. and SEQ ID NO:8 of the instant invention, it is concluded that Villeponteau et al. teach a polynucleotide consisting essentially of a sequence selected from SEQ ID NO:8 as instantly claimed.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 23, 25, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Villeponteau et al. [U.S. Patent No. 5,776,679].

Claim 23 is drawn to an expression vector comprising a recombinant polynucleotide comprising expression control sequences operatively linked with a first nucleotide sequence encoding an inhibitory polynucleotide comprising an antisense sequence of at least 7 nucleotides that specifically hybridizes to a second nucleotide sequence within an accessible region of the RNA component of human telomerase (hTR), but that does not hybridize to a third nucleotide sequence within a template region of the hTR, wherein the second nucleotide sequence within an accessible region is selected from the group consisting of nucleotides 137-196, nucleotides 290-319, and nucleotides 350-380 of hTR (SEQ ID NO:16). Claims 25 and 26 are dependent on claim 23 and include all the limitations of claim 23, with the further limitations wherein the

expression vector comprises a viral vector or a plasmid vector, and wherein the expression vector comprises a plasmid vector contained in a liposome.

Villeponteau et al. teach antisense expression plasmids prepared by PCR amplification of the RNA component cDNA using the following primer: 5'-GTTTGCTCTAGAATGAACGGTGGAAG-3' (see SEQ ID NO:23). It is noted that the primer taught by Villeponteau et al. is contiguous as the local similarity is 100% and does not contain any mismatches (see attached sequence alignment). Given this high degree of similarity, the PCR primer taught by Villeponteau et al. meets all the structural limitations of the claimed invention and would be expected to *inherently* specifically hybridize to a sequence found within an accessible region of the RNA component of the hTR consisting of nucleotides 137-196 (SEQ ID NO:16) as claimed. Villeponteau et al. also teach hTR polynucleotide probes for diagnosis of disease stases where hTR-specific primers may be used (see columns 4 and 5, lines 60-67 and 1-5). It is further noted that Villeponteau et al. also teach at column 24, lines 52-55, that depending on the length and intended function of the primer, probe, or other nucleic acid comprising sequences from the RNA component of human telomerase, expression plasmids may be useful. Villeponteau et al. also teach that nucleic acids of the invention include recombinant expression plasmids for producing the nucleic acids of the invention (see column 3, lines 1-3). Villeponteau et al. also teach the transfer of plasmid DNA in liposomes for delivery in tumor cells (see column 28 and 29, lines 66-67 and 1, respectively).

It would have been obvious to one of ordinary skill in the art to take the PCR primer taught by Villeponteau et al. which *inherently* specifically hybridizes to a sequence found within an accessible region of the RNA component of the hTR consisting of nucleotides 137-196 (SEQ ID NO:16) and use it as a polynucleotide probe for the diagnosis of a disease. One of ordinary

skill in the art would have been motivated to put the probe in an expression plasmid to produce more of the nucleic acid as suggested by Villeponteau et al. One of ordinary skill in the art would have been motivated to use a liposome containing the plasmid for delivery into tumor cells.

Thus, the instant invention would have been prima facie obvious to one of ordinary skill in the art at the time of filing.

Claims 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Villeponteau et al. [U.S. Patent No. 5,776,679].

Claim 27 is drawn to a polynucleotide comprising a sequence of at least 7 nucleotides that specifically hybridizes to a second nucleotide sequence within an accessible region of the RNA component of human telomerase (hTR), but that does not hybridize to a third nucleotide sequence within a template region of the hTR, wherein the second nucleotide sequence within an accessible region is selected from the group consisting of nucleotides 137-196, nucleotides 290-319, and nucleotides 350-380 of hTR (SEQ ID NO:16), and wherein the polynucleotide comprises a nucleotide analog or an non-naturally occurring nucleotide linkage selected from phosphorothioates, phosphoramidates, methyl phosphonates, chiral-methyl phosphonates, 2-O-methyl ribonucleotides and peptide-nucleic acids.

Villeponteau et al. teach antisense expression plasmids prepared by PCR amplification of the RNA component cDNA using the following primer: 5'-GTTTGCTCTAGAATGAACGGTGGAAG-3' (see SEQ ID NO:23). It is noted that the primer taught by Villeponteau et al. is contiguous as the local similarity is 100% and does not contain any mismatches (see attached sequence

alignment). Given this high degree of similarity, the PCR primer taught by Villeponteau et al. meets all the structural limitations of the claimed invention and would be expected to *inherently* specifically hybridize to a sequence found within an accessible region of the RNA component of the hTR consisting of nucleotides 137-196 (SEQ ID NO:16) as claimed. It is further noted that Villeponteau et al. teach complementary antisense polynucleotides include soluble antisense RNA or DNA oligonucleotides which can *hybridize specifically* to hTR RNA species and prevent transcription of the hTR gene for treatment of diseases which require telomerase activity for cellular pathogenesis (see column 17, lines 45-48). The antisense oligonucleotides of Villeponteau et al. have a wide variety of modified nucleotide analogues, such as O-methyl ribonucleotides, phosphorothioate nucleotides, and methyl phosphonate nucleotides, to produce nucleic acids with more desired properties (i.e., nuclease-resistant, tighter-binding, etc.) (see column 17, lines 14-30).

It would have been obvious to one of ordinary skill in the art to take the PCR primer taught by Villeponteau et al. which *inherently* specifically hybridizes to a sequence found within an accessible region of the RNA component of the hTR consisting of nucleotides 137-196 (SEQ ID NO:16) and use it as an antisense polynucleotide for the treatment of disease. One of ordinary skill in the art would have been motivated to modify the antisense polynucleotide to prevent degradation by nucleases.

Thus, the instant invention would have been prima facie obvious to one of ordinary skill in the art at the time of filing.

Claim Objections

Claim 28 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claim 28 is considered free of the prior art since the prior art does not teach or fairly suggest a polynucleotide selected from the group consisting of SEQ ID NOs: 2-14, comprising a sequence of at least 7 nucleotides that specifically hybridizes to a second nucleotide sequence within an accessible region of the RNA component of human telomerase (hTR), but that does not hybridize to a third nucleotide sequence within a template region of the hTR, wherein the second nucleotide sequence within an accessible region is selected from the group consisting of nucleotides 137-196, nucleotides 290-319, and nucleotides 350-380 of hTR (SEQ ID NO:16), and wherein the polynucleotide comprises a nucleotide analog or an non-naturally occurring nucleotide linkage selected from phosphorothioates, phosphoramidates, methyl phosphonates, chiral-methyl phosphonates, 2-O-methyl ribonucleotides and peptide-nucleic acids.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Terra C. Gibbs whose telephone number is (571) 272-0758. The examiner can normally be reached on M-F 9:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John L. LeGuyader can be reached on (571) 272-0760. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

tcg
December 14, 2004

JOHN L. LeGUYADER
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1600

Sequence search alignment... Applicants Copy

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RESULT 34
AR016055/c
LOCUS       AR016055                 26 bp    DNA     linear   PAT 05-DEC-1998
DEFINITION  Sequence 23 from patent US 5776679.
ACCESSION   AR016055
VERSION     AR016055.1  GI:3972332

KEYWORDS    .
SOURCE      Unknown.
  ORGANISM  Unknown.
            Unclassified.
REFERENCE   1  (bases 1 to 26)
  AUTHORS   Villeponteau,B., Feng,J., Funk,W. and Andrews,W.H.
  TITLE     Assays for the DNA component of human telomerase
  JOURNAL   Patent: US 5776679-A 23 07-JUL-1998;
FEATURES             Location/Qualifiers
     source          1. .26
                     /organism="unknown"
                     /mol_type="unassigned DNA"

  Query Match             2.3%;  Score 26;  DB 1;  Length 26;
  Best Local Similarity   100.0%;  Pred. No. 8.2;
  Matches   26;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy        910 CTTCCACCGTTCATTCTAGAGCAAAC 935
              ||||||||||||||||||||||||||
Db         26 CTTCCACCGTTCATTCTAGAGCAAAC 1
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